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AMERICAN DYESTUFF REPORTER

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A Review of the Tariff Commission's Census of the Coal-Tar Industry.

Steam Economy in Logwood Black and Khaki—Part II

By A. Attwood

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AMERICAN DYESTUFF REPORTER

A Weekly Publication devoted to

DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

Vol. 4 New York, October 7, 1918 No. 15

THE "SENSE" IN CENSUS

It Was Put There by the U. S. Tariff Commission, Who Have Made of the Coal-Tar Census a Living Document Rather Than a Dry Collection of Statistics

FACTS and figures are universally conceded to be dull, boresome things. The truth can sometimes be extraordinarily unpleasant and, upon occasion, much better left unsaid, while statistics of almost any kind, involving as they must long tables of numerals arranged tastefully in parallel vertical columns, have been known to produce severe headaches merely upon sight and to make strong men cover their eyes with their hands. As a specific for insomnia, this sort of printed matter finds many warm supporters, but for a means of whiling away an hour or two in a hammock there are those—even in the dye industry, we'll venture—who plead guilty to a preference for *Scribbler's, Snippy Stories*, or the like.

However, it does make a lot of difference what the figures happen to be about. A salesman can be happy almost any length of time while engaged in computing his commissions, and his boss can take an equally deep and abiding interest in the former's expense account—with fewer subdued chuckles and a less kindly feeling for his fellow men, however—while in the case of the latter there are pretty apt to be stockholders and similar unreasonable encumbrances of short vision and stultified intellects who can never see much beyond the figures on their dividend checks. Picture the interest in mere columns of figures taken by a ravening horde of creditors assembled at a bankruptcy proceeding, and—how did *you* feel when you made out your income tax return?

Yes, it does make a vast difference. Hence, allow us to introduce to makers, vendors and users of American dyes the "Census of Dyes and Coal-Tar Chemicals, 1917," compiled by the United States Tariff Commission, and fresh from the presses of the Government Printing Office, Washington, D. C.

Now, if the writer were a book reviewer he would probably continue by saying that "this work is complete in seventy-three pages and is attractively bound in white paper. It constitutes No. 6 of the so-called "Tariff Information Series" issued by the Government and contains a perfect mine of useful

and valuable information. Should be on the desk of every dye fan"—or words to that effect. But, not being a book reviewer, he yet feels constrained to utter them anyway, although it were bringing coals to Newcastle to point out the importance of this, the first really comprehensive attempt to show clearly just how America has made use of her time in building up an independent dye industry.

While the census was still on the presses a digest was prepared in advance and issued by the Government giving the essential figures embodied in the forthcoming compilation. This, together with some comment, was published in the REPORTER a little over four months ago. These figures were also quoted in the press extensively, while upon the actual appearance of the census, just prior to the Chemical Exposition, they were again given, with fuller detail, until we feel that most of our readers are fairly familiar with them.

The real value of the census lies in the part which it will play in the conduct of many businesses as a work of reference, and, in future days, as a record by which our progress can be accurately gauged. It constitutes but the first crystallization of the thousand and one separate ramifications of the industry in this country, and it is only when the census of 1918 is published and filed beside it that its full value will be realized by many who now can see only its limitations.

For limitations it has. Some of the firms manufacturing coal-tar products declined to make returns, while yet others refused for business reasons to permit the publication of statements in pounds of various finished products which they were producing. However, although not all the details are spread out upon the printed page for the eye of the observer, this particular deficiency was remedied in most cases by including these figures in the totals given. Again, owing to the variety of uses to which many of the products dealt with may be put, there was necessarily some duplication of figures which it would be hopeless to attempt to untangle.

In addition, the negligibility of the industry in this country up to—and even for some months after—1914, renders facts about it in those early days for the purpose of comparison with the 1917 returns little more than very good estimates, with the result that out of the eight figures which should properly represent the sum and substance and the epitome of the entire census, one is missing. The value of all the artificial colors made here in 1914 is estimated at $2,470,096, and in 1917 at $57,796,228. The value of the total amount of coal-tar products made here in 1914 is given as $3,596,795, and in 1917 as $68,790,-

YOU can't afford to use any but the finest
Oil Soluble Colors

We Manufacture the Finest

OIL ORANGE
OIL RED
OIL BROWN
OIL YELLOW
OIL BLUE
OIL MAHOGANY

We Can Match Special Colors

SIZING SPECIALTIES CO.
Incorporated
JERSEY CITY, NEW JERSEY

856—a truly creditable showing. The number of pounds of colors manufactured here in 1914 is put at 6,619,729, and by 1917 had jumped to 45,977,246. Here, so far, have been given six of the eight figures referred to. The seventh should be the total number of pounds of coal-tar products of all descriptions manufactured here in 1914, but owing to numerous difficulties and the insignificance of the industry at that time is not obtainable from the Government work of reference compiled then, and is, therefore, wanting. The number of pounds of coal-tar products manufactured in 1917 reaches the imposing total of 54,550,107.

All these figures have, however, already appeared, and so we shall not burden the reader with further repetitions. They are included in the present article merely to serve as a convenient record in permanent form which will save several minutes of searching through the census itself, for in that work they are not given by any means together. Various other statistics, showing just where the holes in our armour of defense lie, and how by overproduction of some colors and underproduction of others—often more important—we have managed to show the world a bulky total which does not yet spell independence for us when once the details are examined—all this essential material and more besides has likewise been commented upon in these pages and will therefore not be repeated.

Viewing the census as a whole, it is one of the most admirable and ambitious attempts imaginable, and, as is apt *not* to be the case with a work of this sort, it is thoroughly readable and contains far more than the mere cut and dried collection of noughts and digits mentioned at the opening paragraph and more than which one has little right to expect. It is a living, illuminating document and a most valuable contribution to contemporary industrial history. Moreover, it presents the numberless materials and operations

REFINED COAL-TAR PRODUCTS

Benzol, Pure
Benzol, 100%
Benzol, 90%
Benzol, 50%
Benzol, Straw Color
Toluol, Pure
Toluol, Commercial
Toluol, Straw Color
Xylol, Pure
Xylol, Commercial
Solvent Naphtha
Crude Solvent Naphtha
Hi-Flash Naphtha
Crude Heavy Solvent Naphtha
No. 10 Naphtha
Heavy Naphtha
Pyridin, Denaturing
Pyridin, Commercial
Paracumaron Resin

Heavy Solvent Oil
Shingle Stain Oil
Special Heavy Oil
Special Heavy Oil, Grade 2
Neutral Hydrocarbon Oil
Creosote Oil
Dip Oil
Phenol, U.S.P. Natural
Phenol, U.S.P. Synthetic
Para-Amidophenol
Cresol, U.S.P.
Refined Cresylic Acid No. 5
Ortho-Cresol
Meta-Para-Cresol
Xylenos
Resorcin, Technical
Resorcinol, U.S.P.
Naphthalin, Flake

Naphthalin, Small Balls
Naphthalin, Large Balls
Naphthalin, Crushed
Naphthalin, Powdered
Naphthalin, Granulated
Naphthalin, Rice
Naphthalin, Lump
Naphthalin, One-ounce Cakes
Naphthalin, Square Tablets
Naphthalin, Round Tablets
Cryst Alba
Nitronaphthalin
Alpha-Naphthylamin
Anthracin 80%
Carbazol
Phenanthrin
Special Cresol Compound
Disinfectants, Coefficients 2 to 16
Phthalic Acid Anhydride

Crude Carbolic Acid, 97-99% Straw Color
Crude Carbolic Acid, 95% Dark
Crude Carbolic Acid, 50% 1st Quality
Crude Carbolic Acid, 25% 1st Quality
Crude Carbolic Acid, 15% 1st Quality
Crude Carbolic Acid, 50-60% 2nd Quality
Crude Carbolic Acid, 25-30% 2nd Quality
Crude Carbolic Acid, 10-15% 2nd Quality

We invite inquiries for the various products listed above, but would call attention to the fact that on some of these items present heavy contract obligations make immediate offerings impossible.

The Barrett Company

17 Battery Place *Chemical Department* **New York, N. Y.**

necessary before a single pound of dye can be made, and likewise the maze of difficulties and *other* industries and markets involved before this pound of dye can be made *at a profit*, in so clear and unmistakable a form as to make us long to place it in the hands of every department store shopper in the country who is still impatient of the results already attained.

The census, as Caesar used to say of Gaul, is divided into three parts, the first containing the census proper and the second being devoted to a "History of the Dye Industry in the United States Since the Beginning of the European War." The third consists of a voluminous appendix wherein are given statistics of imports and exports of all artificial and natural dyes and extracts, general coal-tar products, crudes and intermediates, and even ink and ink powders, some of the figures ranging back as far as 1909 and covering the entire period up to the end of 1917. Needless to say these are eloquent and informing, and (although we are not trying to *sell* you the book) invaluable to anyone engaged in the industry.

Part I opens with a brief summary in which the principal grand totals of significance can be found. This summary is followed by detailed figures on coke production, by-products obtained from the coking of coal, and the production and importation of each of the crudes and principal intermediates considered separately and accompanied with discussions of the relative importance and various applications of each. Then is given the section on "Finished Coal-Tar Products," which is the meat of the whole affair, and from which the census takes its title. The various products appear in vertical columns accompanied by (in the case of dyes) the identification number according to the 1914 edition of the Schultz tables. Beside the name of each product is also given another series of numbers, each denoting a manufacturer producing it, and by referring to the list of 178 out of the 190 manufacturers who contributed to the census it is possible to ascertain the name of the firm and its address at once. This list, which is not quite complete, owing to the refusal of twelve firms to allow publication of their names, appears in the appendix, and is itself valuable. Additional data regarding each coal-tar product include the number of pounds produced here in 1917, the total value of the output, and the average price per pound for which it sold during the year. A detailed interpretation of the now well-known "60 per cent clause," for reference, and figures regarding employees, rates of pay and money expended for research work in the coal-tar chemical industries completes Part I.

American Aniline Products, Inc.

80 FIFTH AVENUE NEW YORK

Factories:

Harrison, N. J. **Nyack, N. Y.**

OLIVE DRAB COMBINATIONS

DIRECT
Amanil Fast Yellow FF
Amanil Brown RC
Amanil Fast Grey BR
Amanil Geranine BB

SULPHUR
Sulphur Yellow R
Sulphur Yellow Brown GG
Sulphur Yellow 3B
Sulphur Black RN

ACID
Amacid Fast Yellow R
Amacid Fast Brown G
Amacid Cloth Red B
Amacid Blue Black KN

CHROME
Alizarine Yellow 3G
Alizarine Brown G
Amacid Chrome Red BB
Alizarine Blue Black BB

New England Office:
87 Summer Street, Boston, Mass.

Southern Office:
Danville, Va.

FRED WETZEL & CO. N.Y.

These latter figures reveal that 176 firms reported a total of 19,643 employees engaged in the manufacture of coal-tar products. Fourteen additional firms found it impracticable to give this information, but should easily pull the total comfortably above the 21,000 mark. To be sure, even with the list of manufacturers at hand, it is impossible to tell whether the cautious fourteen were large or small firms, and hence any speculation as to the probable number which might be added to the list by the inclusion of their personnels is worse than useless; but figuring the average number of employees to each of the 176 firms which reported to be 112, and multiplying this average by fourteen, we have 1,568, which, in turn, added to 19,643, gives us 21,211—which may or may not be safe as a conclusion. But let us call it 21,000—there's room enough!—and contrast this with the 528 persons engaged in the manufacture of coal-tar dyes in this country before the war, and we can indeed see that America is making a mighty effort. Twenty-one thousand, it is true, may look rather silly beside industries like railroading, for instance, but it should prove somewhat disquieting to Hans the Salesman a year or so hence even at that!

Part II, which includes what statistics were available concerning the industry prior to 1914, devotes itself to a complete history of the industry in this country from that time up to the end of 1917. This it divides into four periods. The first covers the time between August 4, 1914, and March 19, 1915, from the beginning of the war to the cessation of imports from Germany, when the impending dyestuff famine caused an unsettled condition of the markets and an abnormal demand. The second period includes the time up to September 8, 1916, the date of the passage of the dyestuff tariff law, which, despite the famous voyage of the *Deutschland*, was characterized by an acute shortage and the active construction of new plants to avert threatened shutdowns in the mills. The third period, from the passage of the law until the declaration of war by the United States on April 6, 1917, saw the development of the already familiar azo dyes and the branching out into newer and untried fields of manufacture, and it was during this period that so much was done to damage the reputation of American dyes by the enforced use of available dyes for textiles for which they were not suited. The fourth period, from the declaration of war up to September of the present year, deals with the present situation resulting from the passage of the Trading with the Enemy Act, which gave the Federal Trade Commission power to issue licenses for the use of German patents on coal-tar colors, the effect which the war has had upon the industry through the commandeering of important chemicals, and the prospects for the future. There is so much of interest in this section of the census that space precludes our going into it at any great length, and it will, therefore, be made the subject of a separate article.

Frank Hemingway, Inc.
115 Broadway, New York

VICTORIA BLUE B
VICTORIA BLUE BASE
CRYSTAL VIOLET
CRYSTAL VIOLET BASE
CHROME BROWN
DIRECT BROWN RBR
ACID BROWN 3RR
MALACHITE GREEN
DIRECT GREEN GG
DIRECT ROSE
BENZYL CHLORIDE
PICRAMIC ACID
ORTHONITROPHENOL
PARANITROPHENOL
METAPHENYLENEDIAMINE
PARAPHENYLENEDIAMINE
PHOSGENE
SALICYLIC ACID

AMERICAN DYESTUFF REPORTER

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Pointed solely toward the welfare and growth of the American Dyestuff Industry. Unbiased contributions appreciated

A. P. HOWES, Editor and Publisher

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VAGARIES OF COLOR NOMENCLATURE

Our ancestresses of sixty years ago would have been puzzled (not to say shocked) in many ways by the special sales advertisements now so much in evidence, and not least by the often-recurring nouns of color—nigger, putty, ivory, bottle, wine, champagne, jade, saxe, helio and navy. These, though, given a clue, are less arbitrary names for fashionable colors than the magenta and solferino of the sixties, called after battle. (But surely some of them date from far before sixty years ago—bottle-green, for instance.) One of the curious things about colors deriving their names from natural objects is that so many of them have traveled a long way from the tint of the thing they are called after. The typical "mauve," for instance, is a much bluer shade than the actual mallow flower, though it is just the color of the faded and rolled-up blossom of the malva plant. "Puce" literally "flea-colored"—another color name derived from the French—is not really, if it ever was, the color of the flea. Nor is "maroon"—still another name of French origin—now the color of a marron, or chestnut. But perhaps the strangest transformation of all is "auburn"—which originally meant whitish (Low Latin alburnus, Latin albus), then a light yellow, and now a reddish-brown. The real cause for this development must surely have been a kindly euphemism. Even now the owners of "carroty polls" would prefer their tresses to be called "golden."

THE LIBERTY LOAN

Once again let us urge all members of the dyestuff fraternity to exert every effort in behalf of the Fourth Liberty Loan. The dyestuff industry in particular should make sure that it is in the vanguard of those industries which respond most generously to the Government's call. The time is coming when this industry will need many favors at the hands of the Administration. Now is our opportunity to show that we are willing to pay our obligations in advance.

THOROUGH RINSING

Too much stress cannot be laid on the injunction that no trace of soap should be left in goods by the time they reach the dyeing operation. All soap residue is decomposed in an acid liquor, and the fatty acid so obliterated at once attaches itself to the fiber, and in that way becomes an effective hindrance to uniform dyeing. After treatment with soap and soda, the material should therefore be most thoroughly rinsed with water, and for the best results the water used for the purpose should be soft, otherwise limesoaps will be formed on the wool, and these are very difficult to remove, and may in turn give rise to faults in dyeing.

DYESTUFFS IN ARABIA

Aden presents a very promising field for the sale of American-made dyes, particularly for synthetic indigo and aniline red. The principal sale for these two dyes has been in the Aden district and in Arabian Red Sea provinces. The Arab men in those districts dye their clothing an indigo blue when they can secure the dye, and the women demand an aniline red for the coloring of the garments they wear. In normal times about $185,657 worth of dyes were imported annually. The cutting off of the German dyes has decreased this quantity materially during the past year or two, and there would seem to be a good opportunity for American manufacturers to supply the demand.

DU PONT DYESTUFFS

Our Development

When this company made its decision to enter the Coal Tar Dyestuff Industry there were two courses of development open.

First, to manufacture an extensive line of colors by taking advantage of the intermediates that could be purchased on the market. Second, the manufacture at the outset of a more limited number of colors, but starting at the bottom with the crudes and manufacturing in our own plants the intermediates required.

The adoption of the first policy would have enabled us to put on the market at an early date a large line of colors which would have found ready sale at considerable profit to ourselves. The second course meant necessarily that our development would be less rapid, that the variety of colors produced at first would be less great and that return upon the increased capital it would be necessary to invest could not be expected for a considerable length of time.

We chose the latter of these two courses, because we believe that the only safe foundation for the development of a self-contained American color industry is the manufacture of a comprehensive line of intermediates, starting at the bottom from the crudes and on such a large scale as to make it economically sound.

Our course is of the most vital interest to the various dyestuff consuming industries, for it guarantees to them an adequate supply of dyestuffs that can never be cut off to leave them again dependent on foreign supplies.

E. I. du Pont de Nemours & Co.

Dyestuff Sales Department

Wilmington **ESTABLISHED 1802** **Delaware**

The Du Pont American Industries are:

E. I. du Pont de Nemours & Co., Wilmington, Delaware, Explosives.
Du Pont Chemical Works, New York, N. Y., Pyroxylin and Coal Tar Chemicals.
Du Pont Fabrikoid Co., Wilmington, Delaware, Leather Substitutes.
The Arlington Works, 725 Broadway, New York, N. Y., Ivory Py-ra-lin and Cleanable Collars
Harrison Works, Philadelphia, Pa., Paints, Pigments, Acids and Chemicals.
Du Pont Dyestuff Works, Wilmington, Delaware, Coal Tar Dyestuffs.

The Fourth Liberty Loan

offers an opportunity
for the

Dyestuff Industry

to support the government at a time when such support means

VICTORY

for the allied cause.

The time will come when we shall need the whole-hearted goodwill of our Government. Let us, therefore,

Demonstrate our loyalty Now!

BUY TILL IT HURTS!

STEAM ECONOMY IN LOGWOOD BLACK AND KHAKI

By A. Attwood

(Concluded from issue of Sept. 23)

Another arrangement we know worked quite well was one when each machine had two reserve tanks. The pump sent the liquor into the top of the reserve tanks by means of an elbow joint pipe. The elbow was fairly long and reached over two tanks. There was a wooden trough along the top of the tanks. The elbow could be moved over one end of it, and when this was done the liquor from one machine was guided into the reserve tank of the other machine, from whence, if necessary, it could at once descend to the other machine. Each pair of reserve tanks had an elbow pipe, of course, and the trough served for either. It was quite simple and easy to work. The arrangement of Fig. 2, though workable, is much better if each machine has two reserve tanks. For one thing, logwood black does not always go just like clockwork, and for various reasons it is sometimes expedient that the machines should be working independently; for instance, if black orders run out for the moment, or if either machine gets out of order. Each machine and its reserve tanks then become a unit.

Fertile Source of Waste

The great waste of steam, which reserve tanks does not cure, is in the washing-off and the emptying and filling of the dyeing machine. Not only steam but time is wasted by these. How shall they be saved? The hand process of hank dyeing gives us the clue. These operations must be performed out of the machine. To wash-off the goods out and away from the machine does not sound impossible, but it seems a contradiction in terms to say that a machine can be emptied and filled away from it. Things are not always what they seem, however. "Emptying and filling" with machines of most types is not as simple as it sounds. There is generally a good deal of arranging of the material to be done. Hanks, for instance, may be put in a stickful at a time. Tops may be individually handled and packed. Loose wool may be thrown in or out in handfuls. While this is being done the machine is waiting patiently, and may be said to be temporarily out of commission; whereas it might just as well be getting on with its work.

The arrangement, conventionally illustrated in Fig. 3, is meant to obviate these drawbacks.

There are no reserve tanks, so there will be no leakages of heat from *them*. Two machines are worked together. C is exclusively for chroming and D exclusively for dyeing.

The goods are contained in false in-

FRED WETZEL & CO. N.Y.

DYE PRODUCTS & CHEMICAL CO., Inc.
200 Fifth Ave., New York City, N. Y.
Works, Newark, N. J.

DINITROTOLUOL

CHROME RED
PONCEAU SCARLET
ACID YELLOW
ALIZARINE BLUE BLACK
NAPHTHOL GREEN
ALIZARINE NAVY BLUE

sides or containers, which by means of an elevator and conveyer can be put into any machine, lifted out, and moved about generally. The drawing shows three of these containers. They are marked *a*, *b*, *c*, and are in the position they would be with work in progress. In C chroming is in progress, in D dyeing is proceeding. At *a* another lot of goods is being packed, ready for its turn.

When chroming is finished, container *b* is craned up to position *d*. While the excess liquor is dripping back into C, container *a* is craned into C. If C is, as it probably will be, a little short of its full quantity of liquor, then the requisite amount for replenishing is sprayed on to the top of the holeful at *d*. What happens? Clean cold water is sprayed on top, but what comes out at bottom is hot chrome liquor, which drips into C. Thus almost all the old chrome liquor *and heat in it* are saved. Chrome is added to C and the process set going. Container *b* is moved from position *d* to position *e*, and washing-off continued. While this is being done, container *c* (the dyeing being completed) is lifted into position *f*. The chromed wool is slipped in from *e* to *c* and dyeing commenced.

The wool at *f* having drained itself pretty thoroughly into the dyeing vessel, is removed to position *g*, and then

FIG. 3

washed off and emptied. The container is taken back to position *a*, filled again, and the cycle of operations repeated.

The economies o fthis suggested arrangement will, we think, be fairly obvious. The chroming and dyeing liquors are never cooled down by needless transfers to cold vessels. The machines are in commission practically all the time, and are never emptied of liquor and cooled by washing off with cold water. Changing the containers is only a matter of about five minutes.

The saving of time, and consequent increase of turn out, are as important features as the saving of steam. Under the ordinary system, pumping up takes from ten minutes to a quarter of an hour; letting a liquor down takes from five to ten minutes. Emptying and filling occupy anything from three-quarters of an hour to one and a half hours. By the method outlined, one more holeful per day would be easy.

There is another point also specially important with logwood black. In the systems illustrated in Figs. 1 and 2 there

Buy Bonds and KEEP them!

Our fighting men do not enlist for one battle or one campaign. They enlist for the duration of the war!

So must it be with the army here at home. The millions of bondholders should enlist for the war—to buy all the bonds they can—to save systematically to pay for these bonds, and to arrange their affairs so that they will not need to sell their bonds till the war is won.

Buy Bonds to your Utmost

Save to your Utmost

Buy, save and keep!

LIBERTY LOAN COMMITTEE
Second Federal Reserve District
120 BROADWAY
NEW YORK CITY

Space donated by
KUTTROFF, PICKHARDT & CO.
128 Duane St.
New York City

FRED WETZEL & CO. N.Y.

is always a danger of chrome and dye liquor mixing. It may be a leaking let-off valve, or a careless workman, or any other of a dozen possible slips. A little leak spells a lot of mischief. When the chroming and dyeing are done in separate machines there is no chance of this happening.

The adaptation of existing machines to this system would not be a very great engineering feat. There would be nothing so intricate as a loom, a spinning frame, or a wool-combing machine. The problem would of course take very different form, according to the type of machine. For instance Klauder-Weldon's would be very different from Calvert's.

We said there need be no reserve tanks. If each machine did six or eight lots per day, the liquor would have done very well and could be let off, not only without much loss, but probably to advantage, owing to accumulation of dirt. But, of course, in case of emergency—a breakdown of some kind—a reserve tank would come in useful to save the liquor while repairs were executed.

Khaki Dyeing

Let us now consider khaki dyeing in the light of our study of logwood.

There is first the method of dyeing with chrome in the bath from the beginning. This is a very good way when in a hurry. But it has two faults. It does not get as good value out of the dyestuffs as the after-chroming method. This is particularly the case with the yellow dyes which form the bulk of the khaki bronze shades. Besides the yellow there is usually some brown and either blue or black dye in the recipe. The browns on the market are very similar to the old Metachrome Brown, and work well with chrome in the bath; but blues and blacks require considerably more to get the equivalent depth of an afterchrome dyeing.

The other objection is, that it is rather a ticklish job using these old liquors over again. The chrome must not go in while the liquor is hot, or precipitation of color lake occurs. We think that most dyers will have found that, notwithstanding longer time, the afterchroming method has dyed the shade the cheapest—entirely by its saving in dyestuff. But this method, unless worked in two baths, entails a fresh liquor every time. The reason for this is that a good dose of chrome is left in the bath. Strange to say, it requires more chrome to get the shade when it is added after exhaustion of the bath than when it is put in at the beginning. By the latter method you use as little as possible, commensurate with full development of the shade, because beyond a point (about 1 per cent of ordinary bichromate of soda) the addition of more chrome checks the color unduly. By the afterchroming method it will be found that 1½ per cent chrome develops a bloomier shade than 1 per cent.

The usual way with the afterchroming is to add the chrome to the same bath and let off when finished. But the arrangement in Fig. 3 would enable the liquors to be used over again. Procedure would be opposite to that with log-

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wood black. Dyeing would take place first and application of chrome afterwards. There would not be a thorough wash in between. When the first stage was finished in C, the goods would be lifted up to position *d*, and enough hot water showered on top to cause the dripping of dye liquor to replenish the dye tank. Then, still hot, the container would go to D, and the goods would be chromed off. After this they would be lifted and washed off.

Of course, if expedient, the chroming could be done first, just as with logwood black. If, for instance, fustic came much cheaper than coal-tar yellows, then it would pay to go on to the chroming and dyeing method. Otherwise, one of the others would be adopted. Until it is possible to get very good exhaustion from one bath, combined with a method that will allow a dyeing to commence with practically a boiling old liquor, it will probably pay to run two baths. It may be objected that the afterchroming method, as sketched, leaves a practically boiling liquor to start the next lot with, and this would lead to unlevelness. This difficulty would be overcome by two factors. First, the addition of the next lot of dye would leave the liquor neutral—that is, if the old liquor had any acid left it, the new dye more than neutralizes it. Consequently, not much dye would go to the fiber on first immersion. It would have to wait until the acid was added. Again, the entrance of the goods would cool the liquor. This would be inevitable under any system. The machine would work, say, ten minutes to get the dye evenly distributed. Then acid could be dribbled in from a dripping pail.

It may seem strange, and the wrong way to progress, to suggest a return to two-bath dyeing. Yet we think our suggestions—to those who have not yet tried the "one-machine-one-job" principle—may be very useful. The principle just enunciated develops into "one machine, one man, one job," and this results in routine work that is characterized by smooth working, quick results, and general efficiency.

CHEMICAL SOCIETY DISCUSSES DYES

The big part which chemistry plays in helping to win the war was strikingly emphasized at many points in the meeting of the American Chemical Society held recently in Cleveland. In his address of welcome William H. Nichols, president of the society, spoke of recent developments in the chemical industry and rapid strides which are now being made toward introducing new processes. General papers on war and the chemist were read by C. L. Parsons, Grinnel Jones, of the Tariff Commission, and E. W. Washburn.

A symposium on the chemistry of dyestuffs formed one of the most interesting features of the convention. Among those who read papers on the subject were R. Norris Shreve, Calco Chemical Company; L. J. Matos, Na-

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tional Aniline & Chemical Company; Grinnell Jones, U. S. Tariff Commission; J. F. Schoelkopf, Jr., War Industries Board; W. L. Crossley, Calco Chemical Company; H. F. Lewis, Bureau of Chemistry; J. M. Mathews, consulting chemist; E. S. Chapin, consulting chemist; Herman Seydel, Seydel Manufacturing Company; C. R. Delaney, J. S. Young & Co.; L. E. Wise, E. G. Adams, H. D. Gibbs, E. W. Pierce, Bureau of Chemistry; A. H. Holland, National Aniline & Chemical Company. The general trend of the papers indicated a tremendous increase in the importance of American dyes, both natural and coal-tar chemicals, since the entrance of the United States in the great war.

Divisional meetings on the second day of the conference were mainly given over to discussions on fertilizer and pharmaceutical chemicals, at which time papers by authorities on the subject were read.

The presidential address given at the conference by Dr. Nichols was largely retrospective, going back to the founding of the society in 1876 and telling something of its early years and its growth.

CLEANING WOODEN DYE TANKS

A good method for cleaning wooden dye vessels, when needed for dyeing a light or bright shade, is to wait after dyeing the next; then, and when the liquor is boiled, put about one ounce of dyestuff in it, and enter some article intended for dyeing a dark shade. Undesirable color or other matter in suspension will be shown by this test. It is then reasonably safe to dye light or bright goods.

Another method is to boil the tank out thoroughly with chloride of lime, using one quart of solid chloride of lime to 150 gallons of water is an advisable proportion.

When thus cleaning with lime, throw the sticks or ladles in also. Boil in this for fifteen minutes. Then let the liquor off, and rinse or wash out the tank thoroughly, seeing that no sediment of lime is left therein.

After this, proceed with the dyeing as before mentioned, trying out the liquor with a garment or piece of material of dark shade first.

We urge that the Textile Industry support the stand of the American Dyestuff Reporter for an American Dyestuff Industry.

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NOTES OF THE TRADE

Following a connection of thirty years with the Heller & Merz Company, Alfred A. Haase has resigned his position to take charge of the dyestuff department of the White Tar Aniline Company, Inc., 2-6 Cliff Street, New York. Mr. Haase has been associated with this firm, which carries a full line of aniline colors, since the first of the present month.

Recent advices from Manchester indicate that the long hoped for amalgamation of British Dyes, Ltd., and Levinstein, Ltd., is still far from completion. Thus far the committee appointed to draw up the terms upon which these two firms will unite have held a single meeting, and have not as yet completed their work. Following this it will be necessary to submit these terms to the stockholders of both organizations for revision, and it is expected that several months must elapse before matters can be arranged to the satisfaction of both contingents.

An estimated loss of $10,000 resulted when the fire demon recently visited the three-story plant of the Iridescent Dye Company, Coney Island, New York. The plant was completely destroyed. Announcements regarding the possibility of rebuilding in the near future have not as yet been made by the company.

Active construction work on the erection of the 100 two-story residences which the National Aniline & Chemical Company is building to house some of the employees of its works at Marcus Hook, Pa., has begun. The dwellings will cost about $2,000 apiece.

A new concern for the manufacture of dyes and dyestuffs has been incorporated with a capital of $100,000, under the laws of Delaware, and bearing the name of Kemica, Inc.

A contract has been let by the General Chemical Company for the erection of a brick and concrete, three-story plant at Baltimore, Md., at a cost of $155,000. The new structure will measure 216½ x 153 feet.

At an estimated cost of $10,000, the Barrett Manufacturing Company will begin the construction of a new two-story reinforced concrete factory building, 40 x 50, to be located at the corner of Margaret and Bermuda Streets, Philadelphia.

A plant under Government patronage is to be established at Clinchfield, Va., for the purpose of recovering toluol, sulphate of ammonia, valuable oils and other by-products from bituminous coal by a new process of low-temperature distillation. At the same time it will produce a valuable smokeless coal in briquette form for use in the navy. On account of the successful tests of "Carbocoal" by the navy and railroads, and the great promise it gives of saving fuel and conserving by-products for imperative war needs, the United States Fuel Administration and the Ordnance Bureau of the War Department are cooperating in the construction of the plant. The plans allow for eventually treating 1,500,000 tons of bituminous coal annually.

The Los Angeles Chemical Manufacturing Company, Los Angeles, Cal., has filed notice of organization to operate a works at Fifty-fifth and Alameda Streets.

A. P. Munning & Co., Newark, N. J., have been incorporated with a capital of $500,000 to manufacture chemicals, etc. J. G. Daniel, Brooklyn, and Julian A. Gregory, East Orange, N. J., are the principal incorporators.

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